

BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE HANDBOOK 32-4016, VOLUME 2
1 NOVEMBER 1997

Civil Engineer

CIVIL ENGINEER READINESS FLIGHT RESPONSE AND RECOVERY HANDBOOK

This handbook summarizes emergency response and recovery considerations. It was compiled by experienced emergency managers to help CE readiness flights and others prepare for the challenges of major accident and natural disaster response and recovery operations.

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MAJOR ACCIDENT CONSIDERATIONS

INTRODUCTION

Major accidents are divided into four phases; notification, response, withdrawal, and recovery. These phases will often overlap.

NOTIFICATION

This phase begins when a report of the incident arrives at a link in the notification chain.

- This link is usually the control tower, fire department, security forces, or command post. However, because the report can come from nearly anywhere, do not discount incident reports based on their source.
- Initial notification is usually followed by activating the crash phone system at base operations.
- Crash phone systems may not be large enough to include all the necessary agencies. Ensure you have procedures to notify all members of the Disaster Response Force (DRF).

Initial Information Is Often Wrong.

- People get excited during emergencies. When people get excited their perceptions of reality can change. This means they will often provide conflicting, incomplete, or inaccurate information concerning the incident location, condition of the resources involved, and what happened. To overcome this tendency, collect as much information as possible from a variety of sources such as;
 - Witnesses who can provide first hand information. Some reports may be inaccurate, so try to find people who may have photographed or filmed the incident.
 - Local emergency responders like firefighters or police. These people may not have seen the incident, but they will be able to

provide good information about the conditions which existed when they arrived.

- News media. They have a wide variety of equipment, often including helicopters. They are also trained observers and communicators. Even though they may not fully understand what happened, they should be able to describe the physical details clearly and concisely.
- Civil Air Patrol, civilian aircraft, or other available means of overflight and reconnaissance. Aerial observation can provide detailed information quickly.
- Initial Reconnaissance Teams (IRTs). These teams can provide the best information, but they are slow to respond. You will need some information before you send them in.
- Assess the information and try to form a more accurate picture for the wing leadership and response forces.

Recall All Disaster Control Group (DCG) Members.

- Even if they are not needed initially, they can provide advice and recommendations.
- They can help control the recall, plot information, answer telephone or radio calls, and perform other necessary tasks.
- The On-Scene Commander (OSC) can release them later.

Initially, Assemble The DCG At A Safe Place, Away From The Emergency.

- To avoid confusion this should usually be the pre-designated primary or alternate DCG assembly areas.
- Classrooms and conference rooms make good assembly areas. As a minimum, the DCG assembly areas should:
 - Be indoors with power, lighting, water, sanitation, and heating/cooling appropriate for the weather.
 - Accommodate at least 30 people and provide chairs, tables or work surfaces, and telephones.

- Be outside explosive safety zones, away from hazardous material storage areas. Some toxic corridors may require 5 miles depending on the nature of the hazard.
- The designated primary and alternate DCG assembly areas should be far enough apart to minimize the likelihood of both areas being affected by the same incident, i.e. being inside the cordon or having access roads cut off.
- In order to prevent interference with the Initial Response Element (IRE) and reduce exposure of DCG members to unnecessary hazards, DO NOT assemble the DCG at the Entry Control Point (ECP) or On Scene Control Point (OSCP).
- Assemble the DCG in a controlled environment so that they may conduct initial briefings, evaluate the situation, and determine who should proceed to the scene, with what equipment, in which order, and by what route.

During Assembly DCG Members Should:

- Sign in - All DCG members should sign in with their name, rank, the agency they represent, and the time they arrived. This lets you track present or missing members and response times.
- Check equipment - The equipment check ensures DCG members have all required personal and professional gear and that the equipment is working properly.
- Review checklists - Some members will need to take action immediately. The checklist review gets people thinking about what they need to do now and what they may need to start doing soon. It also confirms that checklists are current.
- Consider shifts if it looks like it will be extended operations.
- Collect identification devices - The senior DCG member from each agency should collect the required devices. Identification devices ensure all responders know who represents which agency. Such devices include badges, hats, armbands, and vests. Use them in any combination.

- Badges are easy to transport and wear. However, they are small and can only be seen from the front. Badges can be used to limit access and track people. For example, an exchange badge procedure at the ECP can be used to identify who is allowed into the scene and tell at a glance who is inside the cordon.
- Hats can be seen from almost any direction at great distances. However, hats may not be suitable for all weather conditions, i.e., a mesh baseball hat would not be suitable for a cold weather response.
- Armbands can also be seen from great distances, however, they may be obscured by the person's body. They can usually fit over most cold/foul weather gear.
- A reflective vest with the member's office symbol printed on the front and back is visible from any direction at great distances and can fit over most cold/foul weather gear.

CE Readiness Flight Should:

- Oversee the DCG assembly until the OSC arrives or calls for the DCG to deploy to the scene. Keep the DCG members updated on events at the scene and the status of the DCG recall, to include those additional personnel requested by the OSC.
- Conduct checks of communications gear, perform operational checks of other equipment as necessary, load the Mobile Command Post (MCP), and prepare to deploy as soon as the OSC calls for them. If you need additional personnel, recall the Disaster Preparedness Support Team (DPST).

Some notifications may continue, however, notification phase usually ends when the DCG has assembled and the IRE has deployed.

RESPONSE

In general, the response phase begins when the IRE (security, medical, and fire) deploys to deal with the incident. This phase continues until the DCG

arrives on scene and the OSC accepts control of the incident from the senior firefighter or when initial emergency actions are completed.

If The Response Is Off Base

- The military is not automatically in charge! The OSC must find the local authorities and ensure actions are coordinated.
- Proceed in accordance with mutual aid agreements. Even if you have no agreements, you can still respond if the situation meets the memorandum of understanding or immediate response criteria spelled out in AFI 10-802, *Military Support to Civil Authorities (MSCA)*.
- The Command Post must notify higher headquarters that you are responding and contact the Air Force National Security Emergency Preparedness (AFNSEP) Office to get a mission designator as soon as possible. Without a mission designator your wing may not be reimbursed for the response expenses it incurs.
- The OSC with the advice of the Legal representative must determine if a National Defense Area (NDA) needs to be established to safeguard classified defense information or protect DOD equipment or material. If an NDA is established the boundary must be defined, marked with a physical barrier, and warnings must be posted.

The CE Readiness representative must work with the OSC and DCG members to assess the situation. The Transportation representative must determine what type of transportation is needed for the type of terrain at the incident site. The OSC must determine who should go in which vehicles and in what order each vehicle belongs in the convoy. The Security Forces representative will provide drivers with a convoy briefing before the DCG departs for the scene to ensure each driver knows the safe route, location of the cordon, ECP, and the OSCP.

The OSC will need to establish priorities when suitable transportation is limited and the response is off base. Recommended priorities of the follow-on force are:

- In general, the OSC should take at least the MCP, with a Readiness, Public Affairs, and Legal representative.
- If there were casualties or fatalities, the OSC should also take the Chaplain, Medical and Services representatives.

Communication resources may be limited, but you should try to have enough equipment to communicate with your special teams, the Command Post/Battle Staff (CP/BS), and appropriate unit control centers. It is also desirable to be able to communicate with any aircraft that may be involved in the response effort. You should have at least one secure means of communicating between the OSC and the CP/BS. Before the DCG departs for the scene, ensure each member knows who has what communications equipment. Also, consider requesting support from Hammer Ace, a deployable communications support element. It can provide worldwide, single-channel, secure voice, record communications and secure on-site communications.

In general, the DCG should report to the OSC once they arrive on scene. The OSC should brief them on the situation and get a status update from each member. This update should include actions and reports which are complete, on going, or needed soon.

WITHDRAWAL

The withdrawal phase is initiated when the senior fire fighter/OSC determines the incident may endanger the response forces.

In most cases this action will be the call of the senior fire fighter on scene.

When withdrawal is sounded, act immediately!

Notify those near you and take cover!

Move upwind to leave the area. If it is necessary to circumvent the site when leaving, maintain a safe distance from the hazard and move crosswind. Never allow personnel to get downwind from the hazard.

Ensure all responders know the wind direction and plan your escape route before entering the hazard area. The most important thing is to protect people.

RECOVERY

In general, the recovery phase begins when all the immediate hazards are contained and the OSC accepts control of the situation.

When the fires are out, other immediate response actions are done, and the IRT has returned, the DRF members begin developing the Recovery Plan. Recovery operations may take a few days or several weeks. On rare occasions, such as those involving contamination, recovery can take years.

When the danger has passed:

The OSC will need to know the status of the site and determine when responders and investigators can reenter. To get this information, the OSC will usually need an IRT.

- The IRT should be made up of appropriate experts. This does not necessarily mean Explosive Ordnance Disposal and/or CE Readiness. Work with other DCG members to determine who should be on the IRT and what protective items, detection equipment, transportation, and tools they may need.
- The OSC and appropriate DCG members should brief the IRT on the potential hazards and what information they should collect.
- Give the IRT time to assess the information, determine their plan of action, brief each other on procedures and signals, and collect and don their gear. They know the report is important, but their lives and welfare are at stake, so this process can take some time. OSC's should not push them for immediate answers because they may forget something critical.

Control The Recovery Force.

Recovery forces can grow to include hundreds of people. These people may be exposed to hazardous substances, hurt themselves, get ill, or get lost.

The Security Forces representative must be able to account for everyone on the scene at all times. No one should be allowed to operate unnoticed, or enter or exit the cordoned area without being properly logged in or out.

- The Security Forces representative will issue badges to personnel entering the cordoned area and collect them when personnel depart.
- The CE Readiness Representative will use as a minimum a status board to ensure that the OSC, DCG members, flight members, and the DPST are signed in and out.
- DCG members should keep track of their Team leaders and forces which deploy to assist them with their functions.

Control Classified Material.

Depending on the incident, you could have classified material scattered around the incident site, ECP, Mobile Command Post or the control center. This material could include classified documents, code books or keys, weapon components or sensor circuitry, and so on.

The CE Readiness and Security Forces representative must work with local Civil authorities to establish a secure area to store this material. This area may or may not need to be designated as a National Defense Area (NDA). NOTE: If it is designated as a NDA, a Legal representative must provide guidance to include applicability of declaration, size, duration, and marking requirements. The Legal representative will also cover "exclusion areas" that are applicable overseas in nuclear weapons accidents where NDAs are not authorized.

CE Readiness Should Help The OSC.

The CE Readiness Flight should help the OSC follow up on actions, coordinate activities and briefings with local authorities and other DCG members, and generally ensure a smooth operation.

- Periodically review the OSC's checklist and the Recovery Plan with him/her and follow up on open action items.
- Keep track of recovery activities and work with the OSC to arrange DCG briefings when significant actions are completed or due.

Work With Investigation Teams.

A Safety Investigation Board (SIB) or Accident Investigation Board (AIB) will respond to try and find out what went wrong so that the incident can be avoided in the future. They must have access to the incident site and your support.

- Access to the site will be granted to properly designated SIB and AIB personnel once the scene has been declared safe by the OSC.
- The OSC and DCG will provide a briefing on all known hazards and personal protective equipment requirements prior to passing control of the site to the SIB or AIB president.
- The OSC must ensure SIB and AIB personnel are suitably trained and equipped to enter any site where hazardous materials (including biohazards posed by blood-borne pathogens) may pose a threat to their safety.
- Custody of wreckage and other physical evidence may be transferred to the SIB or AIB president at the OSC's discretion.
- Site authority may also be delegated to the SIB or AIB president by the OSC when the site is considered safe.

Do not sacrifice safety, but you may need to delay recovery efforts until the SIB or AIB have completed their investigation. Help make their investigation as thorough and efficient as possible.

Work With Local Authorities.

Keep in mind the jurisdiction issues associated with working with civil authorities. AFI 10-802, *Military Support To Civil Authorities (MSCA)* provides guidance for Air Force personnel on MSCA, focusing on the assignment and allocation of Air Force resources to support civilian authorities during time of peace, transition to war, or war.

The OSC will establish limits of what the military can do and what constitutes the end of the recovery operation.

- Military resources can only be used to save lives or prevent great property damage or human suffering. They can not be used to rebuild the community.
- Establishing a clear end point ensures all parties understand when military responsibilities are over.

For incidents that occur off base use civilian equipment as much as possible. Resort to military equipment only if the jurisdiction allows it and the civil community can not provide it.

- Use of military equipment is contingent upon other mission operations i.e., unless directed otherwise by the Secretary of Defense, other critical military missions have priority over military support to civil authorities.
 - Using civilian resources helps conserve military resources.
 - Using civilian resources avoids the appearance of the military taking control from civil authorities. It also avoids conflict with civilian contractors because you will provide them with work instead of taking work from them.



NATURAL DISASTER CONSIDERATIONS

INTRODUCTION

Natural disasters are divided into four phases; notification, initial emergency, sustained emergency, and recovery. These phases will usually overlap.

NOTIFICATION

This phase begins when the first report of potential disasters reaches a link in the notification chain. The first indication that a natural disaster is imminent or likely will usually come through the weather station or news media.

You Should Have Prior Warning.

With few exceptions, natural disasters take time to develop. The wing may have warning several hours or days in advance that severe weather is coming or that disaster conditions exist. Use that time to prepare.

- Hurricanes, cyclones, and typhoons take days to develop and may travel thousands of miles before they hit land. Weather personnel can track them and predict, with reasonable accuracy, their strength and when and where they will strike.
- Even though weather personnel can not predict exactly where or when tornadoes will strike, they can usually identify when existing conditions can support formation of tornadoes.
- Some disasters, like floods, can often be predicted days in advance. The Army Corp of Engineers and the local Emergency Management office can usually identify the probable flood plains as well.
- Recurring seasonal disasters, like heavy snow during the winter and the resulting floods due to the spring thaw, can be predicted months in advance.

- Unpredictable phenomena include earthquakes, volcanic eruptions, and fires.

Prepare For The Worst.

No matter how bad you think things are likely to get, they can always get worse.

- Depending on the disasters which threaten your area, the wing may need to operate independently, without commercial power, food, or water supplies, and limited communications, for several hours or days.
- For severe weather, such as thunder or lightning storms, a DCG recall may not be necessary. The Weather Support Plan addresses appropriate defensive actions.
- For recurring seasonal disasters, such as blizzards, or extreme cold weather conditions a separate plan, may already exist to outline specific procedures from OPlan 32-1, Annex B.
- For less common disasters, like floods or tornadoes, the commander may chose to recall the DCG to pre-plan the command and control necessary for special or unique protective actions before the disaster strikes.
- Some disasters, like hurricanes, may require evacuation of some or all the wing's assets and personnel. If evacuation is necessary, aircraft should depart first. Allow time for the support forces to finish the launch, prepare the base, load personal gear, families, etc., and depart before the disaster arrives. This could require 24 hours or more. Key on the advice of the local Emergency Management agencies. When they start recommending evacuation, the wing may want to initiate its departure.

INITIAL EMERGENCY

This phase begins when the disaster occurs. It consists of actions necessary to ensure immediate survival and initial recovery.

A basic rule of thumb is that those areas which suffer the most significant damage will be the last to report in or may not report at all.

- These areas may not have the time or capability to report. They may have numerous casualties, they may be busy trying to survive, or they may have lost their radio, telephone, and other communications links.
- The wing may need to send reconnaissance teams to these areas. These teams should be small, self-supporting, and have communication with the DCG or CP/BS. Include engineers to assess the damage and medics to assess the casualty situation and care requirements.
- Roads may be damaged, washed away, or blocked by fallen trees or other debris. Have alternative routes and current maps.

Restore Mission Operations First.

Disasters may affect huge areas, including large sections of the civilian community. However, the primary focus of wing operations must be to protect and restore the wing's mission capability.

- Take action as necessary to save lives and limit damage. This may entail making expedient repairs to facilities and utilities, constructing retaining walls, digging diversion ditches, or evacuating personnel and equipment.
- Under conditions outlined in AFI 10-802, *Military Support to Civilian Authorities (MCSA)*, the wing may be authorized to support civil operations off base. However, civil authorities have primary responsibility for protecting and restoring the civil community.

SUSTAINED EMERGENCY

This phase begins when initial emergency actions are complete. It consists of emergency actions which may take an extended period of time to complete.

Continue lifesaving measures as needed.

Search for, transport, and treat casualties. Be careful to observe prudent safety precautions. It is very easy to end up a casualty while trying to save others.

- Do not enter unstable structures unless absolutely necessary to recover injured personnel.
- Do not enter areas of contamination without suitable protective equipment.

Assess The Damage.

Begin a more thorough evaluation of damage to facilities, utilities, and equipment.

- Focus on resources needed to resume mission operations.
- If the damage exceeds the wing's capability, request support from your MAJCOM, other agencies like Hammer Ace, or other Services if they are available.

Establish Repair Priorities.

Wise use of available resources can simplify the task, speed corrective actions, and reduce the amount of help you need from off base. Some suggested priorities include:

- Restoring transportation routes. Clear selected routes for transporting firefighters, rescue teams, reconnaissance teams, and casualties or repair equipment and personnel.
- Restoring electrical power to critical facilities. Command and control centers will need to operate immediately in order to control recovery efforts. Use portable generators until more permanent power sources are available.
- Restoring communications. Effective recovery requires good command and control with adequate communication. Radios are good for on base, but telephones are needed to maintain contact with off base agencies.

- Restoring water and sanitation services. Clean water is necessary to preserve life. Sanitation is necessary to preserve clean water and prevent disease. You can use bottled water temporarily, but restoring the base water supply should be completed as quickly as possible.
- Clearing and restoring operational assets. Once power, communications, and water are available, the wing may begin to resume mission operations. Clear aircraft operating surfaces, restore navigational aids and air traffic control assets, and provide maintenance areas.

RECOVERY

This phase begins after emergency actions are completed. It consists of actions to restore full operation and mitigate against the effects of similar disasters in the future. This phase can last for years.

Track All Expenses.

Track expenses incurred during all phases of the disaster. AF policy prohibits the wing from budgeting for disaster recovery or MSCA. Nor can the wing procure or maintain equipment or materials for MSCA. In order to ensure the Air Force is reimbursed, to the maximum extent possible, **ALL EXPENSES MUST BE PROPERLY DOCUMENTED!**

Be particularly careful to annotate the civilian man-hours, equipment, and other resources used to provide support to the civil community, other bases, or other Services. Specific information as to what items are reimbursable is contained in the Stafford Act, which should be available in the installation legal affairs office.

Military Support To Civil Authorities (MSCA).

There are specific circumstances when military resources can and should be used to support civilian major accident and natural disaster response and

recovery efforts. These situations and procedures are outlined in AFI 10-802.

Do not respond off base without authorization. This authorization could be in the form of mutual support agreements or as outlined in AFI 10-802.

- The Command Post must notify your higher headquarters that you are responding and contact the Air Force National Security Emergency Preparedness (AFNSEP) Office to get a mission designator as soon as possible. Without a mission designator your wing may not be reimbursed for the response expenses it incurs.

Work with local authorities to establish limits of what the military can do and what constitutes the end of the recovery operation.

- Civil Authorities are responsible for protecting the civilian population and restoring the civil community. Even when military forces respond to assist, civil authorities are still in charge of the overall operation! However, any military forces used in the effort will remain under the direct control of the DOD's executive agent and are subject to recall in the event of a more pressing mission.
- Establishing a clear end point ensures all parties understand when the military response is over.

Provide the fewest resources for the shortest time. This includes personnel as well as equipment.

- Use military resources as sparingly as possible.
- Military resources can only be used to save lives or prevent great property damage or human suffering. They can not be used to rebuild the community.

Use civilian equipment as much as possible. Resort to military equipment only if the mission demands it or the civil community can not or will not provide it.

- Using civilian resources helps conserve military assets.

- Using civilian resources avoids the appearance of the military taking control from civil authorities. It also avoids conflict with civilian contractors because you will provide them with work instead of taking work from them.

Control The Recovery Force.

Recovery forces can grow to include hundreds of people. These people may be exposed to hazardous substances, hurt themselves, get ill, or get lost. The Security Forces representative must be able to account for everyone on the scene at all times. No one should arrive, depart, or operate unnoticed, or enter or exit the cordoned area without being properly logged in or out.

- The Security Forces representative will issue badges to personnel entering the cordoned area and collect them when personnel depart.
- The CE Readiness Representative will use as a minimum a status board to ensure that the OSC, DCG members, flight members, and the DPST are signed in and out.

DCG members should keep track of their Team leaders and forces which deploy to assist them with their functions.

Control Classified Material.

Depending on the incident, you could have classified material scattered around the incident site, ECP, Mobile Command Post or the control center. This material could include classified documents, code books or keys, weapon components or sensor circuitry, and so on.

The CE Readiness and Security Forces representative must work with local Civil authorities to establish a secure area to store this material. This area may or may not need to be designated as a National Defense Area (NDA). NOTE: If it is designated as a NDA, a Legal representative must provide guidance to include applicability of declaration, size, duration, and marking requirements.

CE Readiness Should Help The OSC.

The CE Readiness Flight should help the OSC follow up on actions, coordinate activities and briefings with local authorities and other DCG members, and generally ensure a smooth operation.

- Periodically review the OSC's checklist and the Recovery Plan with him/her and follow up on open action items.
- Keep track of recovery activities and work with the OSC to arrange DCG briefings when significant actions are completed or due.

ACTIONS TO TAKE PRIOR TO TERMINATING RECOVERY OPERATIONS

- Confirm the existence or non-existence of contamination.
- Identify, account for, or recover all classified and hazardous materials.
- Ensure representatives from all affected military and civil agencies complete their observations and all associated tasks.
- Remove wreckage and restore the site in coordination with investigation officials and civil authorities.



HAZARD CONSIDERATIONS

INTRODUCTION

Major accidents and natural disasters can create hazardous conditions beyond the limits of anything you deal with on a daily basis. *Normal safety considerations may not be sufficient.*

MAJOR ACCIDENTS

Major accidents can involve aircraft, vehicles, fires, weapons of any size and type, hazardous industrial materials, and some damage to facilities, utilities, or terrain.

NATURAL DISASTERS

Natural disasters create many of the same hazards related to accidents, but on a much larger scale.

Disasters can seriously damage large sections of your supporting infrastructure like power and telephone lines, pavements, sewers, and water mains.

Disaster damage can adversely affect the response because you may not be able to get to the affected area, fight fires, or have power and communications to conduct the response and recovery actions.

OTHER HAZARDS

This section outlines additional hazards you may encounter during an emergency response. Use it to advise the responding forces and ensure they avoid unnecessary danger.

FIRE

Disasters and accidents often cause fires which consume structures, vehicles, aircraft, trees, grass, and other flammable materials.

- Lightning strikes, arsonists, volcanic eruptions, and other disasters can cause forest or prairie fires.
- Damaged gas mains and electrical power lines can often cause fires.
- If you are inattentive with smoking or campfires during a response, you can start fires as well.

NUCLEAR WEAPONS

The probability of a nuclear weapon detonating and producing a nuclear yield during an accident is astronomically low and has never occurred.

However, severely damaged weapons/weapon components may expose personnel to:

- Radioactive materials.
- Toxic smoke and fumes, to include heavy metals.
- High explosive components and/or fragmentation hazards.

There are several aspects of nuclear accident recovery operations that are different from typical responses. For example, since NDAs or exclusions areas will probably NOT encompass the full extent of contamination, security personnel may require protective equipment. The restoration of the terrain or facilities to mutually agreed upon levels will be exceptionally difficult since it is almost certain background radiation levels will not have been determined prior to the accident. Further, the “neither confirm nor deny policy” is not concrete anymore. It involves notification requirements

for the Secretary of Defense for Public Affairs and may require immediate notification of appropriate local civil authorities.

CONVENTIONAL WEAPONS

All weapons are dangerous regardless of their shape and size! They may contain explosives, fuel, pressurized containers, and other hazardous material.

During disasters weapons may be damaged beyond the average person's ability to recognize them.

Weapons, or weapon parts, may be scattered all over the response area and in various states of stability.

Some general weapon types are;

BOMBS		ROCKETS OR MISSILES
HIGH EXPLOSIVE		AIR-TO-AIR
CLUSTER MUNITIONS		AIR-TO-SURFACE
FUEL-AIR EXPLOSIVES		SURFACE-TO-AIR
INCENDIARY		SMALL ARMS
CANNON ROUNDS		HAND OR RIFLE GRENADES
TARGET TRAINING		MORTAR ROUNDS
HIGH EXPLOSIVE INCENDIARY DEPLETED URANIUM		RIFLE/MACHINE GUN ROUNDS

AIRCRAFT

Even without weapons on board, aircraft contain many hazardous items. Some of these items include:

- Plastics and composite materials. Burned plastics may be hazardous to inhale and burned composites may cause damage to electronic equipment.

- Depleted uranium counterweights may present a low level radiation and heavy metals hazard; the aircraft may also contain other radioactive components.
- Ejection seat cartridges, bomb rack squibs, and pressurized containers can explode.
- Hydraulic fluid, fuel, hydrazine, and flares are flammable, and may produce toxic airborne releases.

HAZARDOUS MATERIALS

Hazardous materials used at home and work are often shipped and stored on base or in the local community.

Some of these materials are;

TOXIC OR CAUSTIC CHEMICALS	ASPHYXIATING CHEMICALS OR GASES
PAINT STRIPPERS	CHLORINE
ACIDS	AMMONIA
HYDRAZINE	POLLUTANTS
FLAMMABLE OR EXPLOSIVE	PETROLEUM, OIL, AND LUBRICANTS
PAINT	SEWAGE
COMPRESSED GAS CANS	FERTILIZER
POISONS	TRASH DETERGENTS
INSECTICIDES/PESTICIDES	
LEAD BASED PAINT	

DAMAGE

The specific nature of the disaster or accident will determine the extent and type of damage you may encounter. Anticipate the following hazards;

- Structural - Building materials are seldom able to withstand the stress of serious accidents or disasters. Concrete, brick, and cinder block can crumble. Plastic, wood, and metal will bend or fracture.

This damage can cause a complete or partial structural collapse. Also, the damage can create situations in which secondary explosions may occur, sharp edges to be present or expose points like nails.

- Glass - Building windows, car windshields, aircraft canopies, etc. will shatter. The fragments can cut through gloves, clothes, and even leather boots.
- Terrain - Damaged trees can fall at any time. Broken limbs and trunks can create splinters which can penetrate clothing. Damaged land features like rock slopes or earth embankments could collapse or avalanche.
- Utilities - Downed power lines and telephone cables can create electrocution hazards. Broken pavement and roads can restrict movement. Damaged natural gas and POL storage and transfer facilities can create fire hazards. Damaged sewage lines, holding tanks, and treatment facilities can contaminate drinking water and cause health hazards for long periods.

OTHER RESPONDERS

Disaster responses cause stress and confusion. People get tired and irritable. This can make your fellow responders almost as dangerous as other hazards! Be aware that;

- Security Forces and local law enforcement personnel will be under great stress and may not be able to tell the “good guys” from the “bad guys” under some circumstances.
- Vehicle and heavy equipment operators may be tired or so task-oriented that they do not adhere to safety practices.
- Stress often brings out the joker in some people. While this can lighten the load, it can be dangerous if horse-play and practical jokes get out of control.

UNIQUE HAZARDS

This section outlines some unique hazards you may encounter during an emergency response. Use it to advise the responding forces and ensure they avoid unnecessary danger.

NIGHT OPERATIONS

In many cases you can limit operations to the daylight hours. However, some responses may require you to operate at night. This greatly increases the danger and difficulty.

Get lights!!

- Use every available source including vehicle headlights or spotlights, helicopter-mounted spotlights, “light all”, flashlights, and anything else you can find.
- Ensure your light sources will not cause you more trouble. For example, if you have fuel leaking, use explosive-safe flashlights, etc.
- Safety measures must be increased. Personnel will use reflective clothing, work in pairs, limit nighttime operations, and be explicit with identification of tripping hazards.
- Ensure Security Forces representative set up appropriate procedures to prevent unauthorized access during periods of darkness.

OFF-BASE TERRAIN

Responses off-base may take you into unfamiliar terrain.

Ensure someone scouts the area carefully and briefs others about hills, cliffs, ditches or other drop-offs, water or marshes, roads, railroads, etc. This is especially important if you are going to conduct night operations.

WEATHER

Temperature, humidity, and precipitation will affect your response and recovery activity.

- Temperature and humidity affects how long and how well you can work. Ensure people are prepared for the conditions. Frostbite or heat exhaustion can complicate your response and divert necessary resources to care for the injured responders.
- Precipitation affects people and equipment. Wet or frozen surfaces can cause vehicle accidents and injuries. Rain soaked ground can reduce traction and may not support heavy equipment. Lack of visibility due to blinding fog, rain, or snow can slow or stop operations. Pounding hail can also cause injuries or damage.

WILD LIFE

Wild creatures see people as sources of either danger or food.

- Avoid wildlife if possible, but take steps to keep animals from disturbing evidence, removing remains, or injuring people.
- Some wildlife which may affect your operations include

RODENTS		REPTILES (poisonous)
RATS & MICE		SNAKES
SQUIRRELS		LIZARDS
INSECTS		PREDATORS
FLIES		COYOTES & FERAL DOGS
MOSQUITOES		FOXES & RACOONS
BEES & WASPS		BIRDS

OTHER HEALTH ISSUES

During response and recovery operations you may sleep little, eat less, and perform extremely strenuous manual labor. This can lead to a number of health problems, especially if the operation continues for several days.

- What you can do to minimize health risks:
 - Follow preventive measures as advised by Safety, Bioenvironmental Engineering, and Public Health.
 - Do not eat food from questionable sources; do not bring food requiring refrigeration into the field, unless provisions are made for keeping it cold.
 - Drink liquids; do not become dehydrated. Take rest breaks sheltered from extreme weather conditions.
 - Do not drink water from an unapproved source.
 - Dress appropriately for the weather (extremes in temperature, precipitation). Try to keep dry in cold weather. Protect against sunburn with hat/clothing/sunscreen/shelter.
 - Protect yourself from lightning; in the absence of an appropriate shelter, kneel or squat with head between knees, do not stand under a tree or near other tall objects that will attract lightning.
 - Practice personal hygiene to the greatest degree possible under field conditions; wash hands before eating.
 - Use personal protective equipment to protect against contact with blood/body fluids when handling casualties or human remains.
 - Do not approach stray/wild animals.
 - Use insect repellent if conditions warrant it.
- Follow the concepts of field health, sanitation, and hygiene outlined in AFM 161-10, "Field Hygiene and Sanitation".
- Mental health is also extremely important. Disasters are traumatic for the victims and the responders.

- The death, destruction, and sense of urgency often combine to create traumatic levels of stress.
- Physical factors can also pile up to increase the stress.
- Keep an eye out for each other, practice stress reduction, and have counseling available whenever possible. It is never too early in the response to start thinking about reducing traumatic stress!!

WILLIAM P. HALLIN, Lt General, USAF
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